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SUGGESTIONS FOR HORSE AND MULE RAISING IN THE SOUTH.^a

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INTRODUCTORY.

With the development of agriculture in the South and the discussion of the best methods to follow and the best policies to adopt few subjects have received more attention from public speakers and writers than the production in that section of the animals needed for work purposes and meat production. The idea is not only that the South should supply its own demand for these animals, but that southern farmers should feed as far as possible the enormous amount of cotton-seed meal and cake which is now shipped out, and thus replace commercial fertilizers to a considerable extent and keep up fertility with barnyard manure. Southern farm methods now in vogue have been criticised by outsiders, but none have been more severe than the leaders in agricultural progress in the South who are southern bred and born.

It certainly seems anomalous to contemplate a vast section of our country spending millions annually for horses and mules, for beef and pork, and for commercial fertilizers, and selling hundreds of millions of dollars' worth of fertility as cotton-seed meal and cake, when we realize that the condition of soil and climate generally

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throughout the South are excellent for animal production. This condition is still more surprising when we know that, properly fed, cotton-seed meal is probably the most valuable protein-bearing feed the country produces, and that its fertilizing value after having gone through an animal's body is almost as great as its feed value. It is also more than passing strange that a southern farmer will buy hay shipped from the West at from \$15 to \$23 per ton when his own land will often yield more hay per acre than the land where the western hay was produced and of as good a quality.

INADEQUACY OF LOCAL SUPPLY OF HORSES AND MULES.

According to figures of the Bureau of Statistics of the Department of Agriculture there were 83,026 horses in South Carolina on January 1, 1907. These horses had a total farm valuation of \$10,437,182, an average of \$126 a head. The same authority estimates the number of mules in the State on the same date at 134,690, with a total farm value of \$20,598,121 and an average of \$153 a head.

The average life of a horse in South Carolina from the time he is mature may be estimated at eight years and that of a mule at ten years. The stock of horses and mules must therefore be replaced once in each eight or ten years, respectively; or, to express it differently, 10,000 horses and 13,000 mules must be raised or brought into the State annually. If all were bred in South Carolina that would require at least 135 stallions and 12,500 mares for horse breeding, estimating a stallion to get 75 colts annually and 75 per cent of the mares to breed each year. For breeding mules the number of jacks required would be at least 240 and the number of mares 26,000, estimating a jack to get 50 mules a year and about 50 per cent of the mares bred to jacks to breed. This would mean a total of at least 38,000 brood mares. To keep up this supply of breeding mares probably 10,000 more should be added to the total. In other words, at least one-half the total number of horses now in the State should be mares used in breeding both horses and mules.

Furthermore, these estimates do not take into account the number of foals and horses from one to four years old necessary to keep up this number, which would be nearly as many more. Therefore, if South Carolina produced her own horses and mules, nearly as many horses and mares as the State now has altogether would have to be in the breeding ranks. In other words, the State has only half as many horses as are actually needed. If we had no other proof, this alone would show that the State goes elsewhere for its horses and mules.

REASONS FOR RAISING HORSES AND MULES AT HOME.

In the opinion of the writer, there are three reasons why South Carolina farmers should raise their own horses and mules. The first one is to keep within the State the great sum which is paid annually for stock shipped in from the North and West. From the estimates given and from the best information at hand, which is largely in the nature of estimates of southern men of experience and authority, it would appear that probably only about 2,000 of the horses and 1,000 of the mules used annually are raised in the State. Estimating the cost of the horses delivered to the South Carolina farmer at \$125 each and of mules at \$175 each, the amount of money sent out of the State annually is \$1,000,000 for horses and \$1,925,000 for mules—\$3,000,000, in round numbers, which could be retained in the State to good advantage.

It may be said that if the State produced its own horses and mules the general market of the country might suffer, and local horse and mule breeders might not be able to raise them at a profit. It is doubtful if this is true, in view of the tremendous activity of the horse and mule markets. The year 1906 was one of unparalleled prosperity for horse and mule breeders. Prices bounded skyward, and for all classes there was a demand greater than the market could supply. This demand shows every indication of being maintained until the supply can meet it, and as long as conditions in business are good there is little, if any, reason to fear an oversupply. The rise in prices of horses in the United States has been such that the export trade has practically ceased except for the best grades of light horses. The European market can not pay the American prices. Should domestic prices decline to the European standard, the export trade would begin again, and this would prevent them from falling below a profitable level.

The second reason is that by producing its own horses and mules the South has stock already adapted to its use. No time is lost in getting an animal to do his best under southern conditions. Furthermore, they would be produced at cost, without having to include in the expense bill a profit to any other producer or middleman. Not only that, but after a horse or mule is 2 years old he will earn his way, and a moderate amount of work is good for him. In this way the animal has been raised to 5 years of age at a minimum cost. Not only is all this a great advantage, but the breeding of the stock is known, or if not it can readily be ascertained. This is of immense importance. If a farmer owns a good horse or mule, naturally he wants another like him, and if the sire is within reach it is an easy

matter to breed mares to him with a reasonable expectation that the sire will duplicate his previous performances.

Let us digress for a moment to point out more in detail the value of knowing something of an animal's ancestry before buying. The laws of heredity are powerful, and they work not through the parents alone, but through grandparents, great-grandparents, and even more remote ancestors. If a line of breeding is proposed which is composed entirely of animals of merit, the mating is almost sure to result satisfactorily; but if there is a stain in it, if some animal was below standard, its faults will crop out somewhere in its descendants. That is the reason why pure breeding is surer than haphazard breeding, and why it is undesirable to breed to "scrubs." It is for this reason that the persistent use of purebred sires of the same breed is sure to show great improvement over the original foundation stock. If for no other reason, then, southern farmers should breed their own animals so that they can know their breeding and use this knowledge for future benefit.

The third reason why the South Carolina farmers should breed horses and mules is that the State has excellent possibilities for stock raising, and that when the supply is increased beyond local needs the demands of outside markets can be filled. The greatest horse-raising State in the country is Iowa, and the greatest horse market for the number handled is Chicago. However, it is estimated that at least half of these horses are sent from Chicago to other points, some for final sale, others for further fitting for market. The highest class of horses will generally be found in the East, in New York and Boston, and the highest prices for good horses are to be had in these cities. Now, if an Iowa farmer sells a horse to a Chicago buyer, and the horse eventually goes to New York, that buyer's profit and the other expenses incident to sale must be included in the price obtained in New York. Des Moines, Iowa, and Columbia, S. C., are quite near the geographical centers of their respective States. Columbia is over 400 miles nearer New York and Boston than is Des Moines. Columbia is just that much nearer the country's best horse market, and there are three large cities and three great ports on the Atlantic seaboard between Columbia and New York, all of them on a direct line from Columbia.

So far as the markets are concerned, the South Carolina farmer has as good advantages as the Iowa farmer. These advantages are not developed, it is true, but the conditions are full of latent possibilities. If good horses are bred in the South, the buyers will soon find it out and there need be no fear that good prices will not be obtained for good products.

POSSIBILITIES OF SOUTHERN MULE MARKETS.

Let us now consider the possibilities of the mule market. Although many of the best draft mules are sold to the cities of the North at top prices and many are used on the farms of the Central West, the backbone of the mule industry is the southern demand. These mules are bred mainly in the States within touch of Kansas City and St. Louis, and these markets handle most of the mules of the country. St. Louis, Memphis, New Orleans, and Atlanta are the great distributing points. South Carolina is probably too far from Kansas City or St. Louis for her mules to sell on those markets in competition with those raised in Missouri, Illinois, and Kentucky, and these States are also much nearer the Memphis market. Further, St. Louis is 40 miles nearer New Orleans than Columbia, and on a direct line; but look at Atlanta. Columbia is only 253 miles from Atlanta, via Augusta; yet Memphis is 419 miles from Atlanta, St. Louis is 733 miles away, and Kansas City is 903 miles away. Atlanta is coming to be one of the great mule-distributing points of the South, and is now the greatest one in the Southeast. No doubt South Carolina farmers get many of their mules from Atlanta, which were first sold on markets two or three times as far from Atlanta as Columbia. The reason for this is surely not that South Carolina can not produce good mules, because there were on exhibition at the 1906 meeting of the South Carolina Dairy and Live Stock Association native mules which were as good as any market requires. With the development of Atlanta as a mule market, the reason that more mules are not bred in South Carolina can not be that there is not a convenient market. A golden opportunity exists here for anyone brave enough to break away from custom and act as a pioneer in mule raising. South Carolina farmers need thousands of mules of a good grade, and at their very door is a market which is in touch with the demand of half a dozen States. What more could be desired?

METHODS OF BREEDING AND MANAGEMENT.

The methods of breeding and management that should be used to produce horses and mules in South Carolina will next be considered. It is a comparatively easy matter to discuss this phase of the subject from the standpoint of central western conditions, but the writer must confess that he approaches it with considerable trepidation when applied to southern conditions. So far as soil, climate, pasture, and forage are concerned, the conditions in the South are very nearly ideal, but there are other circumstances to be considered, chief of which are the use of negro labor and the general inferiority of the stock which must be used as the foundation on which to build. As

to the negroes, no suggestions will be advanced except that many horsemen prefer them for hostlers and grooms. Throughout Kentucky the negro seems to be the favorite stable hand in many of the best breeding establishments, and it is well known that Mr. Ed. Geers, the famous trotting horseman, will not have a white man in his stables if he can help it. These facts seem to show that the negro has possibilities as a horse handler.

NECESSITY FOR THE IMPROVEMENT OF NATIVE STOCK.

The inferiority of the native horse stock is mentioned not to find fault unnecessarily, but to get a point from which to approach the subject. We might as well be frank and recognize that a candid acknowledgment of defects in the animals under consideration will better enable us to reach a logical and definite conclusion. The class of horses which supply the southern markets is not a desirable one. Consult the market reports for St. Louis, Kansas City, Omaha, and Chicago, and it will be found that the classes known as "southern horses," "southern chunks," etc., bring the lowest prices of any. They are variable in type, ranging from very inferior light chunks to a pretty fair type of drivers. As a general rule, they are horses which the Central West can well afford to sell at any price and the South can ill afford to buy, no matter how cheap they may be. This is said solely from the breeder's standpoint. They may be the best farm horses for southern conditions, and on that point the southern farmer's opinion is more valuable than that of the writer, but the writer can not resist the temptation to say that it is doubtful if they are more valuable than their market price would indicate. Two things are certain—most of the horses which the South has are obtained from the North, and the quality of these horses is generally the poorest of any sold on northern markets. It is not, therefore, unreasonable to conclude that, judged solely as horseflesh, the southern horse is not a very superior animal.

Whatever the value of the native southern stock it is there, and the mares must be used as the foundation for any improvement which may be made. Improvement should be begun gradually, without any expectation of jumping from mediocrity to the highest excellence at one bound, and it should begin with the idea of improving, first, the general average of the farm horse of the South.

The first step is the elimination of unsoundness, which should be done as rapidly as possible. In selecting mares for breeding only those should be chosen which are sound in wind and free from ring-bones, sidebones, curbs, and spavins. The tendency for unsoundness to appear is hereditary, and the presence of unsoundness makes a horse practically unsalable.

For most sections of the South the next step should be the increase of size, and this should be done somewhat gradually. The increase in the size of farm horses is of the greatest importance, especially where heavy clay soils are common. Two 1,200-pound horses will probably do more work and eat less than 3 weighing 800 pounds each, and larger ones probably in similar proportion.

Next, conformation should be improved. Conformation is important not only because it has a great effect on the selling price, but because a horse with good conformation will do more work and last longer than one with poor conformation. The points especially to be sought are as follows: Wide, open nostrils; medium-sized, clean-cut muzzle; clean-cut, open jaws; clean-cut head; straight face; wide forehead; large, clear, intelligent eyes; medium-sized, smartly carried ears, set close together; clean-cut throatlatch; clean-cut, well-muscled, long neck, smoothly joined to the shoulders; and sharp, smooth withers. The shoulders should be sloping, and should extend well into the back; the arm should be well muscled and well thrown back. The forearm should be wide and muscular, the knees wide and strong and strongly supported. The cannon should be flat and well developed, so that there is no falling away below the knee. The fetlocks should be wide and straight, the pastern of medium length, strong, and inclined at an angle of about 45 degrees. The feet should be of good size, with large hoof heads, dense bone, well-developed frogs, and wide heels of good height. The back should be straight, broad, and well muscled, and the ribs well sprung. The loins should be straight, broad, well muscled, and closely coupled to the hind quarters; the croup wide and straight; the quarters fully developed; and the tail set high and smartly carried. The flanks should be full. The hocks should be clean cut, wide, strong, and straight, and the supporting cannons broad and flat. Further description of the hind limb practically corresponds to that of the fore limb.

The necessity of these points from the standpoint of durability is obvious on a moment's reflection. A wide, open nostril generally indicates good lung capacity and therefore good constitution. A wide forehead usually indicates brain capacity; a straight face, docility; a full, clear eye, intelligence; an erectly carried ear, alertness. Roman noses frequently indicate strongheadedness and dished faces viciousness. A horse with a narrow nostril, Roman nose, small "pig" eye, narrow forehead, and badly placed lop ears is usually one to be suspected of being capable of all kinds of equine villainy. A thick throatlatch and short, thick neck indicate a horse which will probably be thick in the wind. Meaty withers and shoulders are seldom found with good action. A straight shoulder and pastern shows a limb predisposed to ringbones, sidebones, and other diseases,

and a horse with such conformation will not wear well. Good feet are necessary, as shown by the old adage, "No foot, no horse." The development of the "middle piece"—the body—is necessary for many obvious reasons. A horse with a narrow, shallow body, low back, and weak coupling is not only a weak horse with little constitution, but a poor keeper; a fully developed back, well-sprung ribs, deep body, and closely coupled loins usually indicate a strong one. The development of the floating ribs is important, especially in a brood mare, to allow full room for the development of the digestive and reproductive organs. A full hind flank is important for the reason that a "wasp-waisted" horse is usually a poor feeder and lacks stamina.

The development of the hind quarters is necessary, because the greatest amount of the animal's propelling power is developed there. Not only is muscular development necessary, but the hind legs must be well shaped to endure the great strain that is exerted when pulling a load. The hocks and the legs from these joints to the pasterns should be parallel and set rather close together. Viewing the leg from the side, the back line from the point of the hock to the ground should be perpendicular. The angles of the bones of the lower leg should form an angle at the hock with the cannon of about 60 degrees. If this angle is greater we have what is known as a straight leg, and consequently a hock predisposed to curbs. If the angle is much less a "sickle hock" results. Deflection of the hocks inward causes what are known as "cow hocks." Bad conformation in the hock joint and light development of the joint predispose to spavin, one of the most serious forms of unsoundness.

This, in a general way, covers the points to be looked for in conformation and the reasons for them. Next, we should look for quality. This is shown in the cleanness of the head, neck, and bones of the leg, by the clean-cut appearance of the tendons, the softness and fineness of the hair, and the texture of the skin. Quality is an index of the breeding of a horse and of his stamina and durability.

Next, action should be looked for. This in a farm horse is most important at the walk, which should be regular, straight, free, and, above all, rapid. A fast walker is a far more valuable worker than a slow one, and will turn many more furrows in a day. Action at the trot should be quick and free, straight and true. High action is not necessary in a farm horse, but the knees and hocks should be flexed well with snap and precision.

Finally, in breeding stock the farmer should look for uniformity. His mares should be as nearly alike as possible, and should be so bred as to produce uniform colts.

This will give an idea of the type of farm horse which will readily do work enough to pay for his keep. Any specific mention of the proper size for such horses has purposely been omitted, for the reason that this matter is so important that it can well be taken up again in addition to what has already been said. It is useless to expect a farm mare to produce a good-sized mule or work horse if she herself is undersized. If the South is to produce good salable mules the size of the farm mares must be increased. If it is ever to sell horses at a profit on the New York or Boston markets, the same thing must be done. In the writer's opinion the standard weight of a farm mare should be 1,200 pounds. A mare having the description given, with this weight, would produce a good mule when bred to a good-sized jack, and when bred to a suitable stallion would produce a good work horse for the farm. This statement of standard weight applies to South Carolina under present conditions, and does not apply to conditions which might obtain in other sections of the country, and might not hold even in South Carolina after several generations of systematic breeding up, as will be shown later on.

SELECTING A STALLION.

The selection of stallions to be used in improving the native stock is the next consideration. In breeding animals on the farm one idea should be continually in the farmer's mind—breed true and do not cross. Nothing will produce mongrels more quickly than to breed mares to a stallion of one breed, their progeny to another, theirs to another, and so on. Breeding the same mares to different stallions each year will result in the same thing in the long run. To make success reasonably sure the farmer should determine for himself which breed of horses suits him best and which type in the breed. He should have only his own necessities and market demands in mind. After making such a decision he should select a good, sound, purebred stallion and breed to him, selecting others as may be needed to prevent inbreeding.

HOW TO BUY THE STALLION.

After the decision has been made to improve the native stock by breeding to purebred stallions, steps should be taken to get such a horse if one is not in the vicinity. As a general rule it is probable that purebred stallions are not found in very many parts of the South, and few farmers have enough mares to warrant the purchase of a horse outright. Where such is the case, enough men in a neighborhood to represent the ownership of, say, 75 or 80 mares might band together and organize a company for the purchase of a horse,

each man paying into the treasury of the company a sum proportioned to the number of mares he wishes to breed. Then let this company decide on the breed to use and send a competent representative to visit breeding farms and select a horse. The same plan may be used for the purchase of a jack. By purchasing in this way animals can be obtained at the lowest possible figures and the company has the advantage of dealing with the breeders direct rather than through their agents. Furthermore, if the representative of the company is qualified to judge, the company is likely to get good value.

The company system of selling stallions used by many importers and breeders is applied in the opposite manner. A representative of a stallion owner visits a community and himself proceeds to organize a company. He frequently associates some prominent man with him, giving him a share of stock for his influence. When sufficient men come in to cover the selling price of the stallion at the fixed price for shares, each member gives his note for the amount represented by his share, the agent discounts these notes, and the horse is sold. It is an unfortunate thing that this company method of selling stallions is used. Many horsemen condemn it strongly, even though they may use it. Its existence is condoned on the plea that if it were not used the horses would not be sold; that the horse must be taken to the buyer, because the buyer will not go to the horse. That may have been true in the Central West several years ago, and it may be true in some parts of the South to-day, but in this day of tremendous prices for horses of all kinds it seems strange that a really good horse can not be sold on its merits.

The decline of the company system of selling in the corn belt is being followed by the adoption of the public sale by some breeders, and the firms that use the company system most extensively are carrying it into the South and far West, where less experience has been had with it. There is little doubt that the people of these sections, too, will soon find out the faults of the system, and we can look forward to the time when it shall have passed from us forever. The objections to the system are its expensiveness and general unreliability. To send an agent into the field for several weeks to sell one horse (and often the horse is with him, and a groom also), to pay this agent's commission and the discount on the notes, piles up a tremendous expense bill, which must be added to the cost of the horse and paid for by the purchasers. Stallion owners estimate that it costs on an average about \$1,000 to sell a stallion by the company system. A home-organized company could send a man to Europe for a horse at a smaller expense than that.

The unreliability of the system rests on the fact that, under the law, firms are liable for the acts of their agents only when agents act within the limits of their authority. If a firm wishes to do so, when a purchasing company finds an agent's promises of no value, it can retire behind the excuse that the agent exceeded his authority. However, there are, no doubt, more honest agents than dishonest ones, just as there are more honest stallion owners than dishonest ones.

The element of unreliability is of course not always present in the sale of a horse by the company system, for the representations of an honest agent of an honest firm can be depended on to the letter. But no firm can sell a horse in this way without great cost to the purchasers, in many cases more than the horse is really worth and in most cases more than the shareholders can ever hope to get out of their investment. The system has one great merit, namely, that it is taking many good horses into sections of the country where they are sorely needed, and probably the value of such horses to a community will be equal in the long run to the price paid for them, although this may not show in the books of the companies which purchase them.

THE BREED OF THE STALLION.

Beginners will find themselves confronted at once by the question whether to choose a horse of a light breed or of a heavy breed. By a light breed is meant one of the carriage, roadster, or saddle breeds, such as the Standardbred, Hackney, French Coacher, Saddle Horse, or Thoroughbred. By a heavy breed is meant one of the draft breeds, such as the Percheron, Belgian, Clydesdale, Shire, etc. By selecting a horse of one of the light breeds the beginner starts on the road of producing first what our markets call general-purpose horses, and eventually horses of a better class—carriage horses, drivers, and saddlers. If a heavy horse is selected, the first cross will probably be a general-purpose horse also, but with less quality than when the light breeds are used. Eventually, however, this route leads to the production of heavy horses—the expressers and drafters of the market. The possibilities of these two methods are merely suggested without an attempt to advise specifically which one to follow.

The most common light breeds which may be used for the improvement of the native stock are the Standardbred, the Morgan, the Saddle Horse, the Hackney, the French Coacher, the German Coacher, and the Thoroughbred. The first three have one great advantage over all the others in that they are distinctly American products, and the Standardbred is most important of all, perhaps, because it is found practically wherever an American is found. The Standard-

bred is the national horse of America. He possesses more endurance and stamina than any breed of foreign origin except the Thoroughbred. Any improvement of the general run of light horses in America must be based on the Standardbred. Closely allied to the Standardbred are the Morgans and the Saddle Horse. The Morgans are small in number, but very prepotent. The true Morgan is a horse of excellent conformation and great powers of endurance. The Saddle Horse is the most beautiful and exquisite type of horse the world knows. No other breed possesses such beautiful finish, quality, and imposing appearance. The breed is also very prepotent.

As to the faults of these breeds—the great fault of the Standardbred is that it has been bred too much for speed, and in many cases utterly regardless of anything else. Unsound, ungainly stallions have commanded high service fees simply because they could trot fast and could reproduce this characteristic. As a natural result there is little trueness to type among Standardbreds. The Morgans may be criticised on account of lack of size and the presence of coarseness in some specimens, and the Saddle Horses because they sometimes carry finish and quality to an extreme at the expense of substance. The American Thoroughbred has been bred long enough to be regarded almost as a native. The blood of the Thoroughbred has been used in the improvement of the light stock of nearly every country. It is the purest breed known, possesses great endurance, stamina, and quality. The offspring of Thoroughbred stallions on native mares are likely to have an abundance of quality, but may be hotheaded. Some Thoroughbreds are refined to the point of delicacy and lack size, and in such case should not be used.

The so-called coach breeds of foreign origin—the Hackney and the French and German Coachers—generally excel the Standardbred horse in conformation and action, but they do not breed true to type, as a rule, as do the Saddle Horses and the Morgans. The Hackneys are least to be criticised in this respect. Taken as a whole, all three breeds are what horsemen call “soft” and lack endurance.

The use of any of the native or foreign light breeds mentioned would probably result in an improvement over the native stock, showing considerable increase in size. For more immediate increase in size and much greater size after several generations of systematic breeding, stallions of the draft breeds should be used. The most common ones in the country are the Percherons, Clydesdales, Shires, and Belgians. The French Draft horses are also quite common, but differ little from the Percherons.

Percheron and French Draft horses are most common in the country and have been here longest. They are also the most popular draft

breeds among farmers. Their particular points of value are their activity, strength, compactness, clean legs, and good feet. They have no especially weak points, but sometimes are light in bone. The Clydesdales, the famous draft breed of Scotland, are most popular in Canada and in the Northwest, although they can be found in nearly all parts of the country. They have remarkable action, are very well bred, handsome, and attain great weight. The grades of Clydesdale stallions from native mares do not appear to be so good as Percheron grades, sometimes being very light in the body and bone. The feather on the legs of Clydesdales is also an objection in the minds of some. Shires bear the same relation to English farming that Clydesdales do to that of Scotland. They are heavier bodied than the Clydesdales, have more bone, less quality, and more feather. The Belgians are probably the largest of the draft breeds. Their grades have not yet figured very prominently on the market, as the breed has been introduced only a few years. They have massive bodies, but tend to have rather short necks, coarse legs, and poor feet. It is fair to say that the breed has shown much improvement in America during the last two years, especially in the quality of the legs and feet.

It is important to urge the beginner again not to mix types and breeds. When a line of breeding is selected let him stick to it. If a mare is bred to a Percheron this year, follow it next year with the same mating and breed her fillies to Percherons and their fillies to Percherons. In time a system of breeding like this will give a stock of horses which are practically purebred, which have cost little if anything more than if a consistent plan had not been followed and which can be sold for prices far in excess of the offspring of non-descripts. Furthermore, the stallions used should be registered in an American studbook certified by the Secretary of Agriculture at Washington. There is inserted at the end of this article a list of the studbooks of the country which were certified on January 1, 1907, with the names of their secretaries. By consulting this list the reader can determine whether the pedigree of a stallion is backed by the certificate of the secretary of a reliable studbook.

BREEDING MULES.

In breeding mules, the first point is to see that the mule's sire is a large jack, recorded in the American Jack Stock Studbook. He should stand 15.2 hands, or even 16 hands high, and should weigh up to 1,100 or 1,200 pounds. He should have a large, strong body and heavy bone. Weight and bone are cardinal points in a jack.

If mares sired by light stallions—Standardbreds, Coachers, etc.—are bred to such a jack, mules of good quality and fair weight may

be expected. If the mares are by good Standardbred, Saddle, or Thoroughbred stallions, the mules will be very active and will possess much quality and finish. If these mares have good weight, say 1,100 or 1,200 pounds, this mating will produce the finest sugar mules; if somewhat smaller, good cotton mules will result. If draft-bred mares are used, the mules will of course be heavier. Such mules are the draft mules of the market and are in strong demand for city use. They have more weight than sugar mules, but not quite so much quality.

For small, indifferent 800-pound mares without breeding, nothing better can be expected than the production of inferior cotton mules, or pit and pack mules. It is useless to try to breed good mules from poor mares, and this is one reason why so much attention has been given to the discussion of the importance of horse breeding in the South. There will probably always be more demand in the South for mules than for work horses which can be supplied by locally raised animals, but it is necessary first to have a supply of good, useful farm brood mares. It is doubtful if any jack is good enough to sire a good mule from a small, coarse, plug mare.

GOOD FEEDING ESSENTIAL.

In conclusion, let it be said most emphatically that it is a waste of time and money to try to breed horses, mules, or any other kind of live stock without feed. It is all right to let animals rustle and find their feed, but they must find something worth rustling for when they do rustle, or the rustling will do far more harm than good. Exercise is splendid for the development of bone, muscle, and constitution, but it must be supplemented with plenty to eat. A farm animal (horses and mules are no exception) makes its greatest growth when it is young, and it makes it at the least cost. It is a straight business proposition to feed young animals well, and it even pays to begin on the mother before the youngsters come into the world. Let the colts learn to eat a little grain before they are weaned, and keep this up when pasturage is poor. Let them run in the fields through the winter—the exercise is good for them—and bring them up at night and give them a feed. Do not think that because a colt eats cotton stalks and dried cornstalks he enjoys it. He may eat them because he has to. Nothing responds to feed like a colt, and, conversely, nothing responds more quickly to its absence. Stunt the colt after weaning, refuse to feed him, and you have a stunted horse or mule, undersized at maturity. The feed box and good blood go hand in hand, the one supplementing the other. It is a hopeless, cheerless, profitless proposition to separate them.

LIST OF CERTIFIED STUDBOOKS.

List of studbooks, with names of associations and secretaries, certified by the Secretary of Agriculture, January 1, 1907.^a

HORSES.

Name of breed.	Book of record.	By whom published.
American Trotter	American Trotting Register..	American Trotting Register Association, William H. Knight, secretary, 355 Dearborn street, Chicago, Ill.
Belgian Draft	American Register of Belgian Draft Horses.	American Association of Importers and Breeders of Belgian Draft Horses, J. D. Conner, jr., secretary, Wabash, Ind.
Cleveland Bay	American Cleveland Bay Studbook.	Cleveland Bay Society of America, R. P. Stericker, secretary, 80 Chestnut avenue, West Orange, N. J.
Clydesdale	American Clydesdale Studbook.	American Clydesdale Association, R. B. Ogilvie, secretary, Union Stock Yards, Chicago, Ill.
French Coach	French Coach Studbook.....	French Coach Horse Society of America, Duncan E. Willett, secretary, Maple avenue and Harrison street, Oak Park, Ill.
Do.....	French Coach Horse Register.	French Coach Horse Registry Company, Charles C. Glenn, secretary, 1319 Wesley avenue, Columbus, Ohio.
French Draft	National Register of French Draft Horses.	National French Draft Horse Association of America, C. E. Stubbs, secretary, Fairfield, Iowa.
German Coach	German, Hanoverian, and Oldenburg Coach Horse Studbook.	German, Hanoverian, and Oldenburg Coach Horse Association of America, J. Crouch, secretary, La Fayette, Ind.
Hackney	American Hackney Studbook.	American Hackney Horse Society, A. H. Godfrey, secretary, Tichenor-Grand Building, Sixty-first street and Broadway, New York, N. Y.
Morgan.....	American Morgan Register ..	American Morgan Register Association, H. T. Cutts, secretary, Middlebury, Vt.
Oldenburg.....	Oldenburg Coach Horse Register.	Oldenburg Coach Horse Association of America, C. E. Stubbs, secretary, Fairfield, Iowa.
Percheron	Percheron Studbook of America.	Percheron Society of America, George W. Stubblefield, secretary, Union Stock Yards, Chicago, Ill.
Do.....	Percheron Register.....	The Percheron Registry Company, Chas. C. Glenn, secretary, 1319 Wesley avenue, Columbus, Ohio.
Do.....	The American Breeders and Importers' Percheron Register.	The American Breeders and Importers' Percheron Registry Company, John A. Forney, secretary, Plainfield, Ohio.
Saddle Horse	American Saddle Horse Register.	American Saddle Horse Breeders' Association, I. B. Nall, secretary, Louisville, Ky.
Shetland Pony	American Shetland Pony Club Studbook.	American Shetland Pony Club, Mortimer Levering, secretary, La Fayette, Ind.
Shire	American Shire Horse Studbook.	American Shire Horse Association, Chas. Burgess, sr., secretary, Wenona, Ill.
Suffolk	American Suffolk Horse Studbook.	American Suffolk Horse Association, Alex. Galbraith, secretary, Janesville, Wis.
Thoroughbred.....	American Studbook.....	The Jockey Club, James E. Wheeler, registrar, 571 Fifth avenue, New York, N. Y.

ASSES.

Jacks and Jennets.....	American Jack Stock Studbook.	American Breeders' Association of Jacks and Jennets, J. W. Jones, secretary, Columbia Tenn.
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^a Since this article was written the Welsh Pony and Cob Society of America, John Alexander, secretary, Aurora, Ill., has been certified.